

REMARKS

Claims 1-38 are now pending in the application. Claims 31-38 are herein amended. Claims 39-42 are herein added. The amendments to the claims contained herein are not narrowing amendments. The amendments and new claims do not introduce new matter since they are supported by the specification of the present application as filed. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

Applicant would like to thank the Examiner for courtesy extended during the interview on June 20, 2007.

SPECIFICATION

The Abstract stands objected to for including more than 150 words. A new Abstract is provided above to replace the originally filed Abstract. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

DRAWINGS

The drawings stand objected to for certain informalities. Applicant has attached revised drawings for the Examiner's approval. In the Replacement Sheets FIGs. 1-3 are amended to have a legend of --Prior Art--, as suggested by the Examiner.

REJECTION UNDER 35 U.S.C. § 101

Claims 31-38 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claims 31-38 are herein amended as suggested by the Examiner. Therefore, this rejection is now overcome and withdrawal of this rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art (AAPA) in view of Ren, et al. (U.S. Pat. No. 6,456,590). This rejection is respectfully traversed.

With respect to Claim 1, the AAPA and Ren fail to at least show, teach or suggest n counters that each store a count for a respective channel and that increment that count when a respective ingress module enqueues a buffer to a destination channel. When a buffer is enqueued, an address pointer is stored that is associated with a buffer. A buffer refers to a portion of a memory in which received frame data is to be stored.

When a frame is received from a channel of a network switching device, the frame is stored in one or more buffers of a shared memory, such as memory 208 of FIG. 2 of the present application. As an example, each buffer of a memory may be able to store 512 bytes of data. A single buffer is not allocated to multiple frames. In other words, each frame has a designated buffer or buffers. When a frame of, for example, 64 bytes is received, a single 512 byte buffer is allocated. Any remaining space in the buffer is not filled. As another example, when a frame of 1518 bytes is received, three

512 byte buffers are allocated. The first two buffers are filled and the third buffer is partially filled.

In an Ethernet environment frame sizes vary. Frame sizes may be tens to thousands of bytes in length. Thus, frames may be allocated to a different number of buffers and have varying amounts of unfilled memory.

The claimed invention of Claim 1 accurately tracks actual memory usage regardless of frame size via the claimed counters and incrementing and decrementing techniques. By incrementing a count when a respective ingress module enqueues a buffer to a destination channel, a counter tracks the number of buffers of a memory that are allocated (used). As each additional buffer is allocated, a counter is incremented.

The Examiner admits that the AAPA fails to disclose the claimed counters and relies on Ren for such disclosure. The Examiner alleges that Ren teaches incrementing a counter if a channel receives a frame. Regardless of whether Ren increments a counter upon reception of a frame, the counters of Ren are different than the counters claimed. The counter values of Ren are not representative of actual memory usage for at least three reasons. First, not all received frames of a network switching device are stored in a memory. Some frames are dropped for policy reasons. Thus, although a frame is received, a buffer may not be queued. Second, the buffer size of a memory may not match the size of the received frame. Thus, unfilled memory may be allocated to a channel. Third, the bytes associated with allocated buffers (memory usage) may be different than the number of bytes of a frame. Thus, actual memory usage, as associated with a frame, is greater than the size of the frame.

The counters of Claim 1 are incremented when a buffer is allocated, not when a frame is received. For at least this reason, the counters track the actual amount of memory usage. As best understood by Applicant, Ren discloses incrementing only when a frame arrives at a received channel. See col. 7, lines 59-61 of Ren. The number of frames received does not represent actual memory usage on a network switching device.

The AAPA and Ren also fail to at least show, teach or suggest decrementing counters after data stored in a buffer is transmitted to a destination channel to which the buffer was enqueued. The claimed invention of Claim 1 is further able to accurately track memory usage by decrementing a counter when data of a buffer is transmitted. By decrementing when data of a buffer is transmitted, the claimed invention allows the buffer to be deallocated and returned to a free buffer pool for reallocation and incoming data usage. This deallocation may occur prior to transmission of an entire frame. In contrast and as best understood by Applicant, Ren decrements a counter when a whole frame has been transmitted. Thus, in Ren one or more buffers may remain idle for an extended period of time since reallocation of a buffer does not occur until a whole frame is transmitted.

The AAPA and Ren also fail to at least show, teach or suggest egress modules that exercise flow control on a respective channel when a count, as claimed in Claim 1, is greater than a pause threshold. Since the AAPA and Ren fail to disclose the claimed counters and the claimed incrementing and decrementing, the AAPA and Ren also fail to disclose flow control based on values of the claimed counters.

It is a longstanding rule that to establish a prima facie case of obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 143 (CCPA 1974), see MPEP §2143.03.

Therefore, Claim 1 is allowable for at least the above reasons. Claims 13 and 23 are allowable for at least similar reasons as Claim 1. Claims 2-12, 14-22, 24-30 and 39-42 ultimately depend from Claims 1, 13 and 23 and are allowable for at least similar reasons.

Claims 31-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the AAPA in view of Ren and further in view of Langberg, et al. (U.S. Pat. No. 5,852,630). This rejection is respectfully traversed.

With respect to Claim 31, the AAPA, Ren and Langberg fail to at least show, teach or suggest incrementing a count when a buffer is enqueued to store data for a frame, decrementing the count after the data is transmitted to a destination channel, and causing flow control on a channel when the count is greater than a pause threshold.

The Examiner admits that the AAPA fails to disclose the claimed features of incrementing, decrementing and flow control and relies on Ren for such disclosure. Applicant has shown that Ren also fails to show the claimed features. Applicant submits that Langberg also fails to disclose the claimed features. As best understood by Applicant, Langberg is directed to a rate adaptive digital subscriber line (RADSL) transceiver warm start activation procedure for enabling a DSL device to establish a communication connection. Langberg is not directed to flow control within a switch.

Therefore, Claim 31 is allowable for at least the above reasons. Claims 32-38 ultimately depend from Claim 31 and are allowable for at least similar reasons.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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By: 

Damian M. Aquino
Reg. No. 54,964

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

DMA/JJC